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**PATENT SPECIFICATION** (21)

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Complete Specification  
entitled (54) PALLET ASSEMBLY

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Related Art (56) 67523/65 59.93  
38076/72 59.93  
439342 (55762/69) 59.93

The following statement is a full description of this invention, including the best method of performing it known to us :

11542/78-

L241-49-3D-1 P.C.

F. D. Atkinson, Government Printer, Canberra

BAD ORIGINAL



49,122 m2

This invention is a pallet assembly for supporting and transporting heavy weights. The outer shell, made of a plastic material, provides a water-tight, easily-cleaned surface. A stiffening assembly is enclosed within the shell to provide a reinforcement for the pallet, capable of supporting extremely heavy weight in excess of 2,500 pounds in a rack load position and 12,000 pounds in conventional compression position.

#### DESCRIPTION OF THE PRIOR ART

Many designs of plastic pallets are known in the prior art; however, all designs had a limited weight-bearing capacity in a rack load condition. This pallet design provides resistance to bending when a load is lifted from the floor and, as the edges of the prior art pallets tend to follow the bending moment diagram for a two-point loading system, the loads would fall off.

This invention provides a reinforcing assembly having great strength as compared to the prior art pallets in both rack storage and pick up positions. The pallet assembly has a water-tight surface which permits cleaning and requires little maintenance. Examples of prior art pallets are shown in U.S. No. 3,467,032 and U.S. No. 3,404,642.

#### SUMMARY OF THE INVENTION

This invention is a plastic pallet presenting a moisture-free surface and having a reinforcing assembly which provides a pallet assembly having resistance to bending



and capable of carrying and supporting heavy loads.

#### BRIEF DESCRIPTION OF THE DRAWINGS

A more complete understanding of the objects and advantages of this invention will be apparent from the description and the accompanying drawing in which Figure 1 is a perspective view of the pallet assembly of this invention; Figure 2 is a section view of a portion of the pallet of Figure 1; Figure 3 is a perspective view of a bottom shell inverted to show the construction of the pads.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to Figure 1, an assembled pallet has a top shell 10. The top shell is also known as a deck shell. A bottom shell 11 forms a support for the pallet. The bottom shell has a plurality of pads 20 formed into the shell. In a preferred embodiment, the bottom shell 11 has a curved shell section 12 terminating in an upwardly extending flange 13. A completed pallet assembly has a stiffener assembly 15 positioned within the top and bottom shell and which rests on the tops of the pads. The top shell has a depending flange 14 overlapping the bottom shell flange 13. A water-tight seal is made between the shells by a suitable fastening material such as an adhesive 16, staples 17, or what is known as a crimp joint, not shown.

In one preferred embodiment, the top shell is formed having a plurality of depressions or grooves 19 and elevations known as lands 18, across the surface thereof. In another preferred embodiment, the surface is smooth and



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planar. This patterned surface provides a smooth, snag-free path for the automatic loading of heavy objects. The bottom shell 11 has a plurality of supporting pads 20, 21, 22, 23 and 24 formed along the peripheral and center areas of the shell. The pads may be positioned to permit either a two-way entry or a four-way entry by the lifts of a fork truck. An alternative embodiment 31 is shown in Figure 3 by the dashed lines. In this embodiment, the pad is approximately co-extensive with the width of the lower shell. This pad formation permits entry onto lifts from two directions only. In another embodiment, a sheet material 32 acts to connect the pads.

Figure 2 shows an upper shell 10 and a lower shell 11 in an assembled pallet. The flanges of the shells are in a contacting relationship, to provide a water-tight seal between shells. Another preferred embodiment may be constructed from a single blank of sheet material formed and molded to provide a shell of the design illustrated in Figures 1, 2 and 3. The peripheral edges of three sides are sealed to provide a water-tight pallet.

In the embodiment disclosed in Figures 1, 2 and 3, the flanges are sealed at their peripheral edges which form the edge seal 29. Ultrasonic welding and heat welding may also be used to seal the shells.

The shells 10 and 11 can be formed from many suitable sheet materials such as a high-density polyethylene or polyvinyl chloride, cellulose, acetate or a paper



impregnated with resin. The upper and lower shells are formed by vacuum-molding a heat deformed sheet material. Alternative means of forming the shells include spin casting, mold-casting, injection molding or blow-molding. In certain embodiments, a dipping and spraying process may also be utilized.

Figure 2 shows a section of the pallet and the structure of a pad 20. The pad is formed by a depression in the shell which is filled with a foamed urethane plastic 30, which is allowed to harden and forms a strong, lightweight, compression-resistant reinforcement for the shell.

The urethane material is injected under pressure while the shell is supported within a mold, to insure that the shell does not deform while the urethane is in the process of hardening to form the pad. Figure 2 illustrates a typical stiffening assembly 15 positioned within the shells and resting on the top of the pads.



THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. A pallet assembly comprising a shell, a pallet reinforcing structure positioned within the shell, a plurality of pads formed in the outer surface of the shell to support the pallet assembly and the other surface of the shell forming a load-carrying surface portion.
2. The pallet of claim 1 wherein the pallet will support a load at least 2,500 pounds in a rack load condition.
3. A pallet assembly comprising a top shell, a bottom shell, the top and bottom shells being joined around the outer periphery to form a moisture-proof enclosure, a pallet stiffening structure positioned within the shells, and a plurality of pads formed in the bottom shell.
4. A pallet assembly comprising a top shell, a bottom shell, a pallet reinforcing assembly positioned within the shells, the peripheral edges of the shell sealed to form a moisture-proof enclosure, the bottom shells having a plurality of pads formed therein, the pads being filled with a compression-resistant material.
5. The pallet of claim 4 wherein the compression-resistant material is a foamed polyurethane plastic.
6. A pallet assembly comprising a top shell, a bottom shell, the top and bottom shells being joined around their outer peripheries to form a moisture-proof enclosure, a pallet stiffening structure positioned within the shells, a plurality of pads formed in the bottom shell, the pads being arranged around the periphery and the central areas





of the bottom shell, so as to permit the entry of the forks of a fork lift truck from four directions.

7. The pallet of claim 1 having a lower deck member fastened to a plurality of pads to provide a reinforced pallet having an increased capacity.

8. The pallet of claim 7 wherein the lower deck member is a sheet material.

9. A pallet assembly comprising a top shell, a bottom shell, a pallet reinforcing member positioned within the shells, the peripheral edges of the shells sealed to provide a moisture-proof closure, a plurality of pads formed in the lower deck shell, the pads being filled with a foamed plastic hardened urethane material, some of the plurality of pads being reinforced by a sheet of material fastened to the pads.

10. A pallet assembly comprising a top shell, a bottom shell, a stiffening assembly positioned within the shells, a plurality of pads formed within the bottom shell, said pads filled with a hardened foamed plastic material.

DATED this 15th. day of November, 1972.

OWENS-ILLINOIS, INC.

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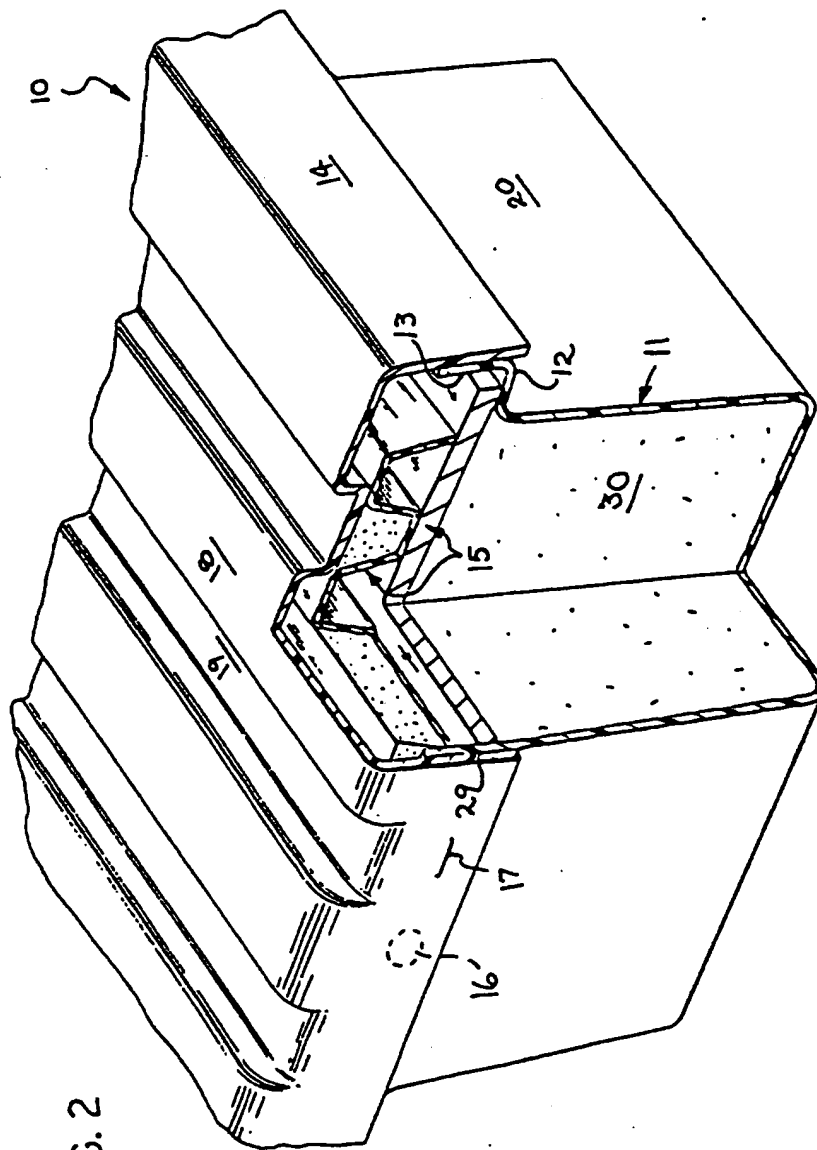
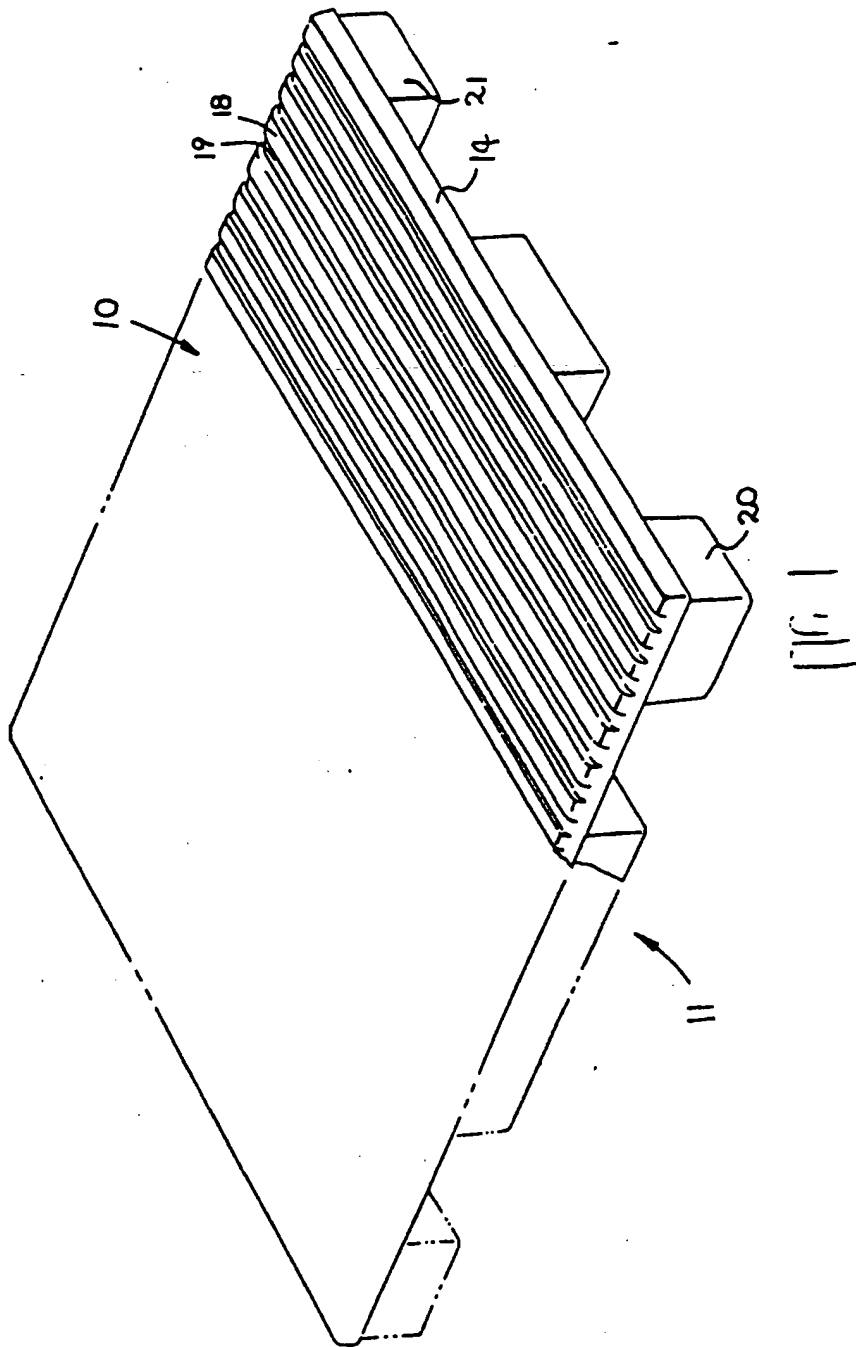


FIG. 2

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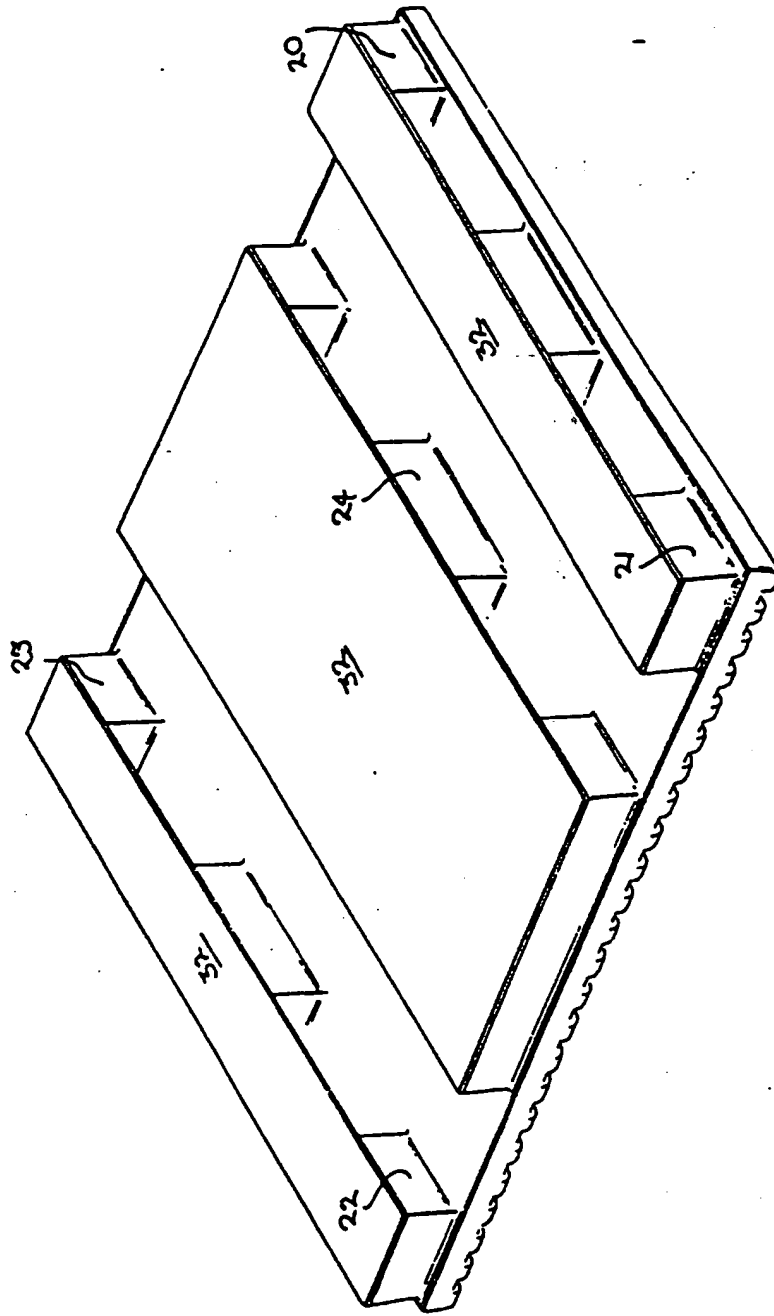


FIG. 3